

WHAT IS CLAIMED IS:

1. A method of forming an integrated circuit, comprising:
forming a via opening through first and second dielectric
layers located over a conductive layer, the via extending through
an interface of the first and second dielectric layers to form a
passing metal feature of an interconnect structure; and
forming a trench in the second dielectric layer, wherein the
trench opening is not formed at the interface of the first and
second dielectric layers.

2. The method as recited in Claim 1 wherein the via opening
is a first via opening and the method further includes forming a
second via opening through the first and second dielectric layers.

3. The method as recited in Claim 2 wherein the trench is a
first trench located approximate the first via opening and the
method further includes forming a second trench over the second via
opening.

4. The method recited in Claim 3 further including etching
through an etch stop and to the first dielectric layer, the etch

3 stop located at the interface of the first and second dielectric
4 layer.

5. The method as recited in Claim 1 wherein forming a trench
2 includes depositing a photoresist over the second dielectric layer
3 and in the via opening and forming an opening in the photoresist
4 through which the trench is formed.

6. The method as recited in Claim 1 further including
2 forming, prior to forming a via opening, the conductive layer,
3 forming a first etch stop layer comprising silicon nitride over the
4 conductive layer, forming a first dielectric layer over the first
5 etch stop layer, forming a second etch stop layer comprising
6 silicon nitride over the first dielectric layer, and forming a
7 second dielectric layer over the second etch stop layer.

7. The method as recited in Claim 1 including forming a
2 conductive copper layer and forming a first etch stop layer over
3 the conductive copper layer and forming a second etch stop layer
4 over the first dielectric layer.

8. The method as recited in Claim 1 further including
2 depositing a conductive material in the via opening and the trench.

9. The method as recited in Claim 8 wherein depositing a
2 conductive material includes depositing copper in the via opening
3 and the trench.

10. The method as recited in Claim 1 wherein forming the via
2 opening through the first and second dielectric layers includes
3 forming the via with a single photolithographic mask.

11. A method of forming an integrated circuit, comprising:
2 forming a first dielectric layer over a first metal feature;
3 forming a second dielectric layer over the first dielectric
4 layer; and
5 forming from a single photolithographic mask a via opening
6 that extends through the first and second dielectric layers such
7 that the via opening is void of a landing pad at an interface of
8 the first and second dielectric layers, the via extending between
9 the first metal feature and a second metal feature located over the
10 second dielectric layer.

12. The method as recited in Claim 11 wherein the via opening
2 is a first via opening and the method further includes forming a
3 second via opening through the first and second dielectric layers
4 and to a first etch stop layer located over the first metal
5 feature.

13. The method as recited in Claim 12 further including
2 forming a first trench approximate the first via opening and a
3 second trench over the second via opening and to a second etch stop
4 layer located over the first dielectric layer.

14. The method recited in Claim 11 further including forming
2 a landing pad in a surface of the second dielectric layer, forming
3 a third dielectric layer over the second dielectric layer and
4 forming a via opening through the third dielectric layer and to
5 the landing pad.

15. The method as recited in Claim 11 wherein forming a
2 trench includes depositing a photoresist over the second dielectric
3 layer and in the via opening and forming an opening in the
4 photoresist through which the trench opening is formed.

16. The method as recited in Claim 11 further including
2 forming, prior to forming a via opening, the first metal feature,
3 forming a first etch stop layer comprising silicon nitride over the
4 first metal feature, forming a first dielectric layer over the
5 first etch stop layer, forming a second etch stop layer comprising
6 silicon nitride over the first dielectric layer, and forming a
7 second dielectric layer over the second etch stop layer.

17. The method as recited in Claim 11 wherein the first metal
feature includes copper and the first and second dielectric layers
includes silicon dioxide.

18. The method as recited in Claim 11 further including
depositing a conductive material in the via opening.

19. The method as recited in Claim 18 wherein depositing a
conductive material includes depositing copper in the via opening.

20. The method as recited in Claim 11 further including
forming transistors selected from the group consisting of:
a complementary metal oxide semiconductor device,
a bipolar complementary metal oxide semiconductor device, and
a bipolar semiconductor device.

new
21. A semiconductor device, comprising:

2 a first metal feature located over a semiconductor surface and
3 having a first dielectric layer located thereover and a second
4 dielectric layer located over the first dielectric layer, the
5 second dielectric layer having a second metal feature located in a
6 surface thereof; and

7 a via located through the first and second dielectric layers,
8 the via extending between and connecting the first metal feature
9 and the second metal feature, the via being void of a landing pad
10 between the first and second dielectric layers.

22. The semiconductor device as recited in Claim 21 wherein
2 the via is a first via and the semiconductor device further
3 includes a second via located through the first and second
4 dielectric layers and wherein a trench structure is located over
5 and connects with the second via.

23. The semiconductor device as recited in Claim 21 further
2 including a trench structure located adjacent the via.

24. The semiconductor device as recited in Claim 21 wherein
2 the via is a passing metal via with no passing metal feature.

25. The semiconductor device as recited in Claim 21 further
including transistors wherein the first metal feature is located
over the transistors and interconnects the transistors to form an
operative integrated circuit.

26. The semiconductor device as recited in Claim 21 further
including a damascene structure located adjacent the via.

27. The semiconductor device as recited in Claim 21 further
including a third dielectric layer located over the second
dielectric layer and a landing pad located between the second
dielectric layer and the third dielectric layer.

28. The semiconductor device as recited in Claim 27 further
including a via that extends through the third dielectric layer and
contacts the landing pad.